Space Weather Forecast

Issued on Monday, 26 September 2022 at 13:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily Chance of R1 Minor Radio Blackouts throughout. Chance of CME arrival day 1 or early day 2, with slight chance G1 Minor geomagnetic storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with only common class flares observed. The strongest of these was from a relatively wide, but modestly sized sunspot region in the southeast disc. This is one of five active regions on the disc, and a part of a complex of two sunspots in the southern central disc, with the other region just west of the centre disc. Very little growth has occurred in either region. The largest sunspot in terms of area in the northeast quadrant, however this has seen some simplification. The other two regions are smaller and simpler, and in the western hemisphere. No Earth-directed coronal mass ejections (CMEs) have been observed in the last 24 hours, although a CME was observed leaving the Sun from near the southeast limb

Solar Wind / Geomagnetic Activity: The solar wind speed was at background levels at around 300 km/s. Its magnetic field was weak, with the important north to south component initially pointing weakly south, but becoming more variable. The Corresponding geomagnetic activity was Quiet (Kp 0 to 2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained very close to background levels, and well below the level of a solar radiation storm.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be generally Low, with a daily chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: Current background winds have the potential to become slightly enhanced later day 1 (26th) or 27th) due to the glancing arrival of a weak CME or from any interaction with the faster winds from a coronal hole currently in the southeast quadrant of the Sun. Both of these are low confidence. Any enhancement will then gradually ease day 3 and day 4 (28th and 29th) with solar winds returning to background. Geomagnetic conditions are likely to be Quiet at first, but increasing to Unsettled with a chance of Active intervals later day 1 or early day 2 (26th or 27th). There is the potential for Active to G1/Minor Storm if any CME arrival occurs in the same time period. Conditions easing to mainly Quiet with isolated Unsettled intervals day 3 (27th) onward.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to persist close to background levels, with only a very slight chance of rising towards the radiation storm (S1) level if any notable flares occur from any of the sunspots on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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